UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/543,674	04/07/2000	Marco C. Heddes	RAL9-00-0006	2001

25299 7590 02/11/2004

IBM CORPORATION
PO BOX 12195
DEPT 9CCA, BLDG 002
RESEARCH TRIANGLE PARK, NC 27709

EXAMINER	
TRAN, TONGOC	

ART UNIT	PAPER NUMBER
2134	6

DATE MAILED: 02/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/543,674	HEDDES ET AL.	
	Examiner	Art Unit	
	Tongoc Tran	2134	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 April 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to applicants' application serial no. 09/543674 filed on 4/7/2000.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 4/7/2000 has been considered by the examiner.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by DeLong et al. (U.S. Patent No. 6,230,231).

In respect to claim 1, DeLong discloses the method of providing a hash and a complement of the hash for an item in a computer system, the method comprising the steps of:

(a) providing a plurality of component from the item, the plurality of components including a first component and a last component, each of the plurality of components including a first component and a last component, each of the plurality of component including a particular number of bits (see col. 2, lines 15-30);

(b) cascading the plurality of component through at least one XOR to provide a plurality of resultant, the plurality of resultants including a first resultant and a final resultant, the final resultant including only the last component and the first resultant including an XOR of the first component and remaining cascaded components of the plurality of components (see col. 2, lines 15-50);

© applying an invertible hash function and an invertible hash function complement to at least the first component of the plurality of components (see col. 2, line 58-col. 3, line 3).

In respect to claim 3, the method of claim 1, wherein each of the plurality of components includes thirty-two bits (see col. 1, lines 45-48).

In respect to claim 5, the method of claim 1 wherein the invertible hash function and the invertible hash function complement providing step © further includes the steps of:

(c1) applying the invertible hash function and the invertible hash function complement to each of the plurality of resultants, the hash including the invertible hash

function and the invertible hash function complement of the first resultant, the complement of the hash including the invertible hash function and the invertible hash function complement of each of the plurality of resultants except the first resultant (see col. 2, line 58-col. 3, line 8).

In respect to claim 7, the method of providing a hash and a complement of the hash for an item in a computer system, the method comprising the steps of:

(a) providing a plurality of component from the item, the plurality of components including a first component and a last component, each of the plurality of components including a first component and a last component, each of the plurality of component including a particular number of bits (see col. 2, lines 15-30);

(b) applying an invertible hash function and an invertible hash function complement to at least the first component of the plurality of components (see col. 2, line 58-col. 3, line 8);

© cascading the plurality of component through at least one XOR to provide a plurality of resultant, the plurality of resultants including a first resultant and a final resultant, the final resultant including only the last component and the first resultant including an XOR of the first component and remaining cascaded components of the plurality of components, the hash including the first resultant and the complement of the hash including the plurality of resultants except the first resultant (see col. 2, lines 15-50).

In respect to claims 9, the claim limitations are substantially similar to claims 3 therefore the same rejection applied.

In respect to claim 11, the method of claim 7, wherein the invertible hash function and the invertible hash function complement providing step (b) further includes the steps of :

(b1) applying the invertible hash function and the invertible hash function complement to each of the plurality of components (see col. 2, lines 15-30 and col. 2, line 58-col. 3, line 8).

In respect to claims 13, 15 and 17, the claim limitations are computer readable medium claims that are substantially similar to method claims 1, 3 and 5. Therefore, claims 13, 15 and 17 are rejected based on the similar rationale.

In respect to claims 19, 21 and 23, the claim limitations are computer readable medium that are substantially similar to method claims 7, 9 and 11. Therefore, claims 19, 21 and 23 are rejected based on the similar rationale.

In respect to claims 25, 27 and 29, the claim limitations are system claims that are substantially similar to method claims 1, 3 and 5. Therefore, claims 25, 27 and 29 are rejected based on the similar rationale.

In respect to claims 31, 33 and 35, the claim limitations are system claims that are substantially similar to method claims 7, 9 and 11. There fore, claims 31, 33 and 35 are rejected based on the similar rationale.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2, 8, 14, 20, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeLong et al. (U.S. Patent No. 6,230,231) in view of Bass et al. (U.S. Patent No. 6,675,163).

In respect to claim 2, DeLong discloses the method of claim 1, but does not discloses wherein the hash function is a geometric hash function. However, Bass Discloses applying geometric hash functions in an IP address (see Bass, col. 7, lines 27-31). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize geometric hash function taught by Bass to improve collision rates that enable high speed look-ups in full mach tables without additional resolution searches (see Bass col. 7, lines 29-31).

In respect to claims 8, 14, 20 and 32, the claim limitations are substantially similar to claim 2 therefore the same rejection applied.

5. Claims 4, 10, 16, 22, 28 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeLong et al. (U.S. Patent No. 6,230,231) in view of Craig Hunt ("TCP/IP Network Administration", Second Edition, O'Reilly & Associates, Inc., 1998, page 13).

In respect to claim 4, DeLong discloses the method of claims 1 wherein the final component includes a plurality of bits used to pad the final component to the particular number bits. However, Hunt discloses last component of an IP header includes a

plurality of bits of padding. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use include padding in the past component of the header address taught by Hunt for the purpose of providing the size of the component with equal length.

In respect to claims 10, 16, 22, 28 and 34, the claim limitations are substantially similar to claims 4 and therefore the same limitation applied.

6. Claims 6, 12, 18, 24 30 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeLong et al. (U.S. Patent No. 6,230,231) in view of Bruce Schneier ("Applied Cryptography, Protocols, Algorithms, and source Code in C", second edition, John Wiley & Son, Inc., 1996, page 237).

In respect to claim 6, DeLong discloses the method of claim 1 but does not explicitly discloses further comprising the step of:

(d) providing a permutation of at least one component of the plurality of components. However, Schneier discloses a technique that cause diffusion through transposition (permutation) of messages (see Schneier, page 237, 4th paragraph). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the technique of permutation with DeLong's teaching in order to dissipates the redundancy of the plaintext by spreading it out over the ciphertext so that cryptanalyst looking for those redundancies will have a harder time finding them (see Schneier, 137, 4th paragraph).

In respect to claims 12, 18, 24, 20 and 36, the claim limitations are substantially similar to claims 6 and therefore the same rejection applied.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

-Raj Jain discloses a comparison of hashing schemes for address lookup in computer networks.

-Rigoutsos discloses a two-dimensional Affine-invariant hashing defined over any two-dimensional convex domain and producing uniformly-distributed hash keys.

-Liao discloses a method and apparatus for fragmenting message for wireless network using group sharing of reference numbers.

-Tello discloses modified computer motherboard security and identification system.

-Zucker discloses delayed removal of address mapping for terminated processes.

-Yang et al. Discloses a network address filter device.

-Lawler et al. Discloses a high speed cache management unit for use in a bridge/router.

-Chin discloses an addressing mechanism for multiple look-up tables.

-Bennet discloses method and system for creating a perfect hash using an offset table.

-Schnell discloses a method and apparatus for hasing addresses in a network switches.

-Slater discloses a system for managing cluster of network switches using IP address for commander switch and redirecting a managing request via forwarding an HTTP connection to an expansion switch.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tongoc Tran whose telephone number is (703) 305-7690. The examiner can normally be reached on 8:30-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory A. Morse can be reached on (703) 308-4789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner: Tongoc Tran
Art Unit: 2134

TT

MATTHEW SMITHERS
PRIMARY EXAMINER
Art Unit 2137

February 6, 2004